Claims:

1. A rekeyable lock cylinder comprising:

a cylinder body with a longitudinal axis;

a plug assembly disposed in the cylinder body, the plug assembly including a plug body and a carrier sub-assembly disposed adjacent the plug body, the carrier sub-assembly being moveable parallel to the longitudinal axis of the cylinder body between a first position and a second position.

2. The lock cylinder of claim 1 wherein the plug assembly further includes a plurality of pins and the carrier sub-assembly further includes a plurality of racks for engaging the pins.

3. The lock cylinder of claim 2 wherein the racks disengage from the pins in response to movement of the carrier from the first position to the second position and engage the pins in response to movement of the carrier from the second position to the first position, the lock cylinder being in a rekeyable condition when the carrier is in the second position.

4. The lock cylinder of claim 2 wherein each pin includes at least one gear tooth.

5. The lock cylinder of claim 2 wherein the pin includes a hollow cup-shaped body.

6. The lock cylinder of claim 1 wherein the plug assembly further comprises a plurality of pins and a plurality of springs, the plurality of springs having a non-constant diameter

7. The lock cylinder of claim 6 wherein the pins are cup-shaped and configured to receive the plurality of springs.

8. The lock cylinder of claim 1 wherein the carrier sub-assembly further includes a spring catch for retaining the carrier in the second position.

9. The lock cylinder of claim 8 wherein the spring catch includes a U-shaped center portion and a pair of arms extending from the center portion.

10. The lock cylinder of claim 9 wherein the carrier sub-assembly further includes a spring-catch recess, the recess including a guide configured to

receive the U-shaped center portion of the spring catch and a pair of anchors configured to engage the pair of arms.

11. The lock cylinder of claim 8 wherein the cylinder body includes a groove for receiving the spring catch when the carrier sub-assembly is in the second position.

12. The lock cylinder of claim 8 wherein the spring catch moves from an engaging position, wherein the spring catch retains the carrier in the second position, to a disengaged position in response to rotation of the plug sub-assembly in the cylinder housing.

13. The lock cylinder of claim 2 wherein each rack includes at least one locking bar-receiving groove and a plurality of pin-engaging gear teeth and each pin includes at least one gear tooth for engaging the rack between two of the plurality of pin-engaging gear teeth.

14. The lock cylinder of claim 2 wherein the carrier sub-assembly further includes a carrier having a plurality of rack-receiving slots and a locking bar recess.

15. A rekeyable lock cylinder comprising:

a cylinder body with a longitudinal axis;

a plug assembly disposed in the cylinder body, the plug assembly including a plug body and means for changing the lock cylinder between a rekeying condition and an operating condition, the means for changing being moveable parallel to the longitudinal axis of the cylinder body.

16. The lock cylinder of claim 15 wherein the means for changing includes means for preventing rotational movement of the plug assembly in the cylinder body.

17. The lock cylinder of claim 16 wherein the means for preventing includes means for locking the plug assembly against rotation in the cylinder body.

18. The lock cylinder of claim 15 wherein the means for changing includes a carrier movable between a first position and a second position and means for biasing the carrier toward the first position.

19. The lock cylinder of claim 18 wherein the plug assembly further includes a plurality of pins and the carrier includes a plurality of racks, the racks being engaged with the pins when the carrier is in the first position and disengaged from the pins when the carrier is in the second position.

20. The lock cylinder of claim 15 wherein the means for changing includes means for engaging the cylinder body to retain the carrier in the second position.

21. The lock cylinder of claim 20 wherein the means for engaging is configured to disengage from the cylinder body in response to rotation of the plug assembly in the cylinder body.

22. A rekeyable lock cylinder comprising:

a cylinder body with a longitudinal axis;

a plug body disposed in the cylinder body;

a carrier disposed adjacent the plug body;

a plurality of pins disposed in the plug body; and

a plurality of racks for engaging the plurality of pins, the racks being disposed in the carrier for movement parallel to the longitudinal axis of the cylinder body between a first position and a second position.

23. The lock cylinder of claim 22 further including a locking bar movable between a locked position and an unlocked position, wherein the plug body is rotatable in the cylinder body to a rekeying position when the locking bar is in the unlocking position and the racks are movable to the second position when the plug body is in the rekeying position.

24. The lock cylinder of claim 22 wherein each pin includes at least one gear tooth for engaging one of the plurality of racks.

25. The lock cylinder of claim 24 further including a biasing spring disposed against each of the plurality of pins, each biasing spring having a non-constant diameter.

26. The lock cylinder of claim 25 wherein each of the plurality of pins includes a cup-shaped body for receiving the biasing spring.

27. A rekeyable lock cylinder comprising:

a plug body having a longitudinal axis and a plurality of pins; and

a plurality of racks disposed to engage the pins, the racks being moveable transversely to the longitudinal axis and parallel to the longitudinal axis.

28. The lock cylinder of claim 27 further comprising a carrier having a plurality of slots for receiving the racks, the carrier being movable longitudinally between a first position and a second position, the racks being engaged with the pins in the first position and disengaged from the pins in the second position.

29. The lock cylinder of claim 28 wherein the carrier is rotated about the longitudinal axis from a home position to the first position and longitudinally from the first position to the second position.

30. A method of rekeying a rekeyable lock cylinder comprising the steps of:

providing a lock cylinder with a plug body and a lock face having a keyway and a tool-receiving aperture;

inserting a first valid key in a home position of the keyway;

rotating the plug body from the home position to a first position;

inserting a tool in the tool-receiving aperture;

removing the first valid key from the keyway;

inserting a second valid key in the keyway; and

rotating the plug body away from the first position.

31. The method of claim 30 wherein the lock cylinder further includes at least one rack and at least one pin engaged with the at least one rack and the step of inserting the tool includes the step of moving the at least one rack out of engagement with the at least one pin.

32. The method of claim 30 wherein the lock cylinder includes a carrier moveable parallel to a longitudinal axis of the lock cylinder.

33. The method of claim 32 wherein the step of inserting the tool includes the step of moving the carrier from the first position to a second position.

34. The method of claim 30 wherein the step of inserting the tool includes the step of moving a carrier from a first position to a second position, the carrier including a means for retaining the carrier in the second position.

35. The method of claim 34 wherein the step of rotating the plug away from the first position includes the step of releasing the spring catch to allow the carrier to return to the first position.

36. The method of claim 30 wherein the plug body includes a plurality of pins and a plurality of racks for engaging the plurality of pins, the step of inserting the tool including the step of moving the plurality of racks parallel to a longitudinal axis of the lock cylinder to disengage the plurality of racks from the plurality of pins.

37. The method of claim 36 wherein the step of inserting a first valid key moves the plurality of racks transversely to the longitudinal axis.

38. A method of rekeying a rekeyable lock cylinder comprising the steps of:

providing a plug body having a keyway;

providing a carrier;

inserting a first valid key in the keyway;

rotating the plug body to a first position;

moving the carrier parallel to the longitudinal axis of the lock cylinder;

removing the first valid key from the keyway;

inserting a second valid key in the keyway; and

rotating the plug body away from the first position.

39. A method of rekeying a rekeyable lock cylinder comprising the steps of:

inserting a first valid key in the lock cylinder;

providing a plurality of racks for engaging a plurality of pins;

moving the plurality of racks parallel to a longitudinal axis of the lock cylinder to disengage the plurality of racks from the plurality of pins;

replacing the first valid key with a second key; and

moving the plurality of racks parallel to the longitudinal axis of the lock cylinder to engage the plurality of racks with the plurality of pins.

40. The method of claim 39 wherein the step of inserting includes the step of rotating a plug body to rotate the plurality of racks from a home position to a first position and the step of moving the plurality of racks to disengage includes the steps of moving the plurality of racks from the first position to a second position.

41. The method of claim 40 wherein the step of moving the plurality of racks to engage includes the step of moving the plurality of racks from the second position to the first position.